

FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST- 5337
CITY OF MESA MUNICIPAL SEWER SYSTEM

SUMMARY

The City of Mesa is located in south central Franklin County about 100 miles southwest Spokane. The City owns and operates a wastewater treatment facility just southwest of the city that consists of a series of three lined lagoons discharging to three artificial wetlands. The original lagoon system was constructed in 1981; an upgraded facility began operation in 2001. Mesa has a population of about 440 people. The facility has a design population of 712.

Since the original lagoon system was built in 1981 the Ground Water Quality Standards for Ground Waters of the State of Washington, Chapter 173-200 WAC, have been adopted. As a part of requirements for an engineering report for the new facility, a ground water quality characterization study was required. Four new ground water monitoring wells were constructed at the site, as well as, vadose zone monitoring ports under the constructed wetlands to evaluate their operating efficiency.

Ground water monitoring sampling conducted during the hydrogeological study was discontinued at the end of that study, before a full year of data was collected. Therefore a thorough understanding of ambient ground water conditions is not understood. Consequently, interim ground water limits will be set until the termination of this permit, when final limits will be set.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. **ST-5337**. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments

<u>GENERAL INFORMATION</u>	
Applicant	City of Mesa
Facility Name and Address	103 Franklin; P.O. Box 146; Mesa, WA 99343
Type of Facility:	POTW; Three membrane lined facultative lagoons discharging to three artificial wetlands.
Facility Discharge Location	Latitude: 46° 34' 22" N Longitude: 119° 20' 26" W.
Contact at Facility	Name: Cade Scott Telephone #: (509) 265-4253
Responsible Official	Name: Patti Bailie Title: Mayor Address: P.O. Box 146 Telephone #: (509) 265-4253 FAX # (509) 265-4259

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

The City of Mesa is located about 100 miles southwest of Spokane and 30 miles north of Kennewick. The City is located within Esquatzel Coulee, one of the Channeled Scabland Coulees. The treatment site is located just southwest of town in an area bordered by Esquatzel wasteway on the east and the Esquatzel Coulee wall on the west. Farmland borders the south end of the site; and on the north the site narrows and ends where the wasteway pinches against the coulee wall.

The collection system consists of approximately 16,000 lineal feet of 8" gravity sewer, 3700 feet of 6" and 500 feet of 4" pressure sewer and two pump stations. The larger of the two pump stations lifts sewage from the city, across the Esquatzel wasteway to the treatment site. The treatment facility, encompasses about 8.38 acres, and consists of three membrane lined facultative lagoons and three constructed wetlands. Capacity of the lagoons is 7 million gallons. Water is stored in the lined lagoons during the winter months and discharged to the wetlands during the growing season for the wetland plants. The total capacity for the three wetlands is 1.4 million gallons, however, as loaded under current operating conditions wetlands typically contain approximately 550,000 gallons of wastewater. Hydraulic head is very low; as a consequence often no effluent migrates through the soil column beneath the wetlands into the underlying sampling ports.

HISTORY

The City of Mesa is located in Franklin County about 100 miles southwest of Spokane and 30 miles north of Kennewick. Esquatzel Coulee and the Burlington Northern Railroad line act as the western boundary of the developed portion of the city. The City of Mesa has a population of about 440, up from 425 in 1999 when plant upgrades began.

The original plant, constructed in 1980 -1981, consisted of three earthen lined non-overflow lagoons, and had a capacity of 7.04 million gallons. Standards, at the time the facility was constructed, allowed a 0.1 inch per day seepage rate from such lagoon systems. The first two lagoons were constructed to handle existing flows, while the third lagoon was constructed for projected growth. At the time of construction, population was anticipated to reach 500 by the year 2000. The third cell never received any wastewater.

Conditions of the previous permit required the City to upgrade the sewage treatment facility to meet current state standards. Construction of the new facility was undertaken during 2001; and the upgraded plant became fully operational in the spring of 2002. The facility now consists of a series of three membrane lined facultative lagoons followed by three artificial wetlands

COLLECTION SYSTEM STATUS

The collection system was constructed in 1981, and is operating without any apparent difficulties. The mainlines in the Gannon Addition east of May Avenue gravity flow to the Poe Park lift station where the sewage is pumped back into the mainline on May Avenue. The

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remaining mainlines gravity into the Judson Street lift station. From there, all of the of the City's wastewater is pumped through a 6" force main to the treatment lagoons. At the treatment facility the wastewater discharges to a concrete diversion box. PVC distribution pipes lead from the diversion box to the center of each lagoon. The operator can regulate which lagoon or combination of lagoons receives raw wastewater.

TREATMENT PROCESSES

The current treatment system is designed for a population of 712. Treatment is obtained via three facultative lagoons discharging to constructed wetlands. Treatment occurs principally in facultative lagoons 1 and 2 prior to discharge to the constructed wetlands during the wetland plant growing season, generally March through October. Lagoon 3 fills mainly during the months from November through February, when no treated wastewater is discharged to the wetlands.

The treatment lagoons are designed so that if effluent depth exceeds 5.5' wastewater will automatically overflow through an un-valved transfer pipe into an adjacent lagoon. Lagoon 1 is maintained at full levels from January through June, from three to five feet deep during the months of July through September and fills from November through December. Lagoon 2 usually operates at full capacity from January through February, three to five feet deep from March through June, about three feet deep during July through September and refills from November through December. As Lagoon three is maintained for winter storage, it fills beginning in November and continues through February. Effluent levels are maintained at about 3 feet from March through June. During July through September Lagoon 3 is drained to the constructed wetland in preparation for winter storage.

The wetlands are normally operated with approximately 18 inches of water in them during the growing season, usually March through September. They drain from November until late December, and as a rule do not contain water from January through February.

DISTRIBUTION SYSTEM

Treated effluent is discharged from facultative lagoons to constructed wetlands where it infiltrates to ground.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the lagoons will be land applied under a permit from the Benton-Franklin County Health District.

GROUND WATER

A hydrogeologic characterization and ground water study has been conducted at the treatment site. Borehole cuttings obtained during the investigation indicates the site is underlain by sandy silt and silty sand sediments interbedded with thin clayey intervals extending from just below

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ground surface to depths of 18 to 57 feet. The sandy silt and silty sand sequence is assigned to the Hanford formation. Three of the five boreholes penetrated basalt under the Hanford formation. The basalt encountered is interpreted as the upper flow of the Roza Member of the Wanapum Basalt.

The shallowest ground water found under the treatment facility is unconfined and within Hanford formation suprabasalt sediments. Total thickness of the aquifer is unknown, however, based on the results of data compiled from wells in the general area of the site during the ground water characterization study it appears to be about 75 feet thick. The uppermost aquifer encountered in well M-4, located along the south property boundary, is in the Roza interflow zone, at the base of the suprabasalt sediments. Along the western edge of the site, where the Columbia River Basalt Group is shallower than elsewhere on the site, the Roza interflow zone is host to the uppermost aquifer. Drill data shows that groundwater under most of the site occurs at about 50 feet below ground surface. Hydraulic gradient has been calculated to range from 0.0051 ft/ft to 0.0087 ft/ft. Ground water table maps included within the hydrogeologic characterization report show that the gradient dips to the east, northeast and southeast into the Esquatzel Coulee and towards the waste way. However, the floor of the waste way is approximately 15 to 20 feet above the water table intercepted under the site, therefore, the aquifer under the site does not discharge into the waste way.

The vadose zone at the site is 45 to 50 feet thick and composed of interbedded fine grained silt and sand. Samples of vadose zone soils analyzed as part of the site characterization contained approximately 50% moisture by volume. Under these conditions it is concluded that vertical movement of moisture in the soils could move from ground surface to the unconfined water table in three to five years.

During the hydrogeologic study ground water data was collected from four wells, M-1, M-2B, M-3, and M-4. Data from M-1 varies considerably from the other three. Ground water quality intercepted by M-1 appears largely unaffected by past site operations; conversely, quality of ground water seen in M-2B, M-3, and M-4 appears to have been affected. Data included in the hydrogeologic characterization report states M-1 is not up-gradient of the site, because ground water is flowing radially away from the site, towards the well into the coulee. The reason the parameter concentrations are higher in M-1 than in the other three wells has been interpreted to be due to the difference in hydraulic conditions in M-1 relative to the other wells. Strata encountered in M-1 is largely a more gravelly facies than the finer grained sediments seen in the other on site wells. This gravel strata has hydraulic conductivity, transmissivity, and permeability several orders of magnitude higher than interbedded silt and sand. Water quality seen in M-1 has been interpreted to be influenced by up-gradient coulee ground water more so than the water quality within the much finer grained, lower permeability, sand and silt present in the areas around the other drill holes.

Generally speaking, nutrient levels in M-1 are below ground water quality criteria; nutrient levels in M-2B, M-3, and M-4 are above ground water quality criteria. Data discussed in the hydrogeologic characterization and ground water quality report states that, "All four wells generally show decreases in ground water quality parameter concentrations." But, it is not known if the downward trend is a short or long term event, as the ground water samples collected during this study were collected in less than a one year time span; and the program was

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completed in less than a 10 month timeframe since wastewater began being held in lined lagoons. The time lapsed might be too short to realize a realistic downward trend of contaminants in the ground water. Two rounds of ground water monitor well sampling data returned after the ground water characterization study was completed show a definite decrease in nutrient levels. Ground water monitoring will continue throughout this permit to determine potential seasonal variation in the data, operational efficiency of the new facility, and water quality background concentrations for use in future permit enforcement limits.

PERMIT STATUS

The previous permit for this facility was issued on January 6, 1999.

An application for permit renewal was submitted to the Department on July 30, 2003 and accepted by the Department on December 5, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on August 20, 2003.

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. The proposed wastewater discharge prior to infiltration or land application is characterized for the following parameters:

Table 1: Wastewater Characterization

<u>Parameter</u>	<u>Concentration</u>
BOD ₅	avg - 41.7 mg/l; max - 95.5 mg/l
TDS	avg - 798.2 mg/l; max - 991.4 mg/l
Conductivity	avg – 719.4 µhmos; max – 894 µhmos
pH	min – 7.82 s.u.; max – 10 s.u.
Fecal Coliform	max – 49 100/mL
Total Coliform	max – 79 100/mL

SEPA COMPLIANCE

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and

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reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the wetland that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 2: Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L

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Toxics

No toxics in toxic amounts

The Department has reviewed existing records and has determined that quality of ground water beneath this site has been degraded by activities conducted prior to the plant upgrade and is of lower quality than the criteria given in Chapter 173-200 WAC. The Department attempted to calculate interim ground water limits in the proposed permit, for those pollutants known to exceed the criteria expressed in the regulation. The pollutants are Nitrate, TDS, and sulfate. . Several factors limit the validity of establishing interim limits at this time, including; initial monthly monitor well water quality data was gathered over a less than one year time period, seasonal variations in ground water quality have not been identified, and a large data gap exists since the ground water characterization study ended and ground water sampling was resumed. It appears that since the plant upgrade was completed impacts to ground water have been lessened, however, there is not yet enough data available to confirm this. The parameters not exceeding the ground water criteria at the time of construction will be held to the Ground Water Quality Criteria listed in WAC 173-200. The discharges authorized by this proposed permit are not expected to interfere with beneficial uses.

Ground water monitoring will continue on a quarterly basis through the end of this permit cycle, when ground water conditions will be re-evaluated and new permit limits will be determined.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED January 6, 1999

Table 3: Comparison of Previous and New Limits

Parameter	Existing Limits	Proposed Limits
Flow	49,000 gpd avg. mo.	92,000 gpd avg. mo.
pH	6 – 9 s.u.	6 – 9 s.u.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2 . Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

VADOSE ZONE MONITORING

Monitoring ports have been constructed beneath each constructed wetland area at the base of the root zone of the wetland plants. Testing will be conducted as listed under Condition S2 in the proposed permit.

GROUND WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from 2000 engineering report prepared by Spink Engineering and are as follows:

Monthly average flow (max. month):	.092 mgd
BOD influent loading:	106 lbs/day
TSS influent loading:	74 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity.

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit condition S6. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503 and by Ecology under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is under the jurisdiction of the local health district.

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Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will be used by Ecology to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

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Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on June 19 and June 26, 2003 in the Wilbur Register to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

This permit was written by R. Wayne Peterson.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

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Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy,

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crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

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APPENDIX C—SITE MAP

*FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST- 5337
CITY OF MESA MUNICIPAL SEWER SYSTEM*

APPENDIX D--RESPONSE TO COMMENTS